

CLAIMS

What is claimed is:

1. A locking method, comprising:

5 locating a two-dimensionally movable locking plate, which is defined with a first direction and a second direction perpendicular to each other;

arranging said locking plate with a release position and a safety position in said first direction, and a latched position and an unlatched position in said second direction; said locking plate is movable between said latched and unlatched positions when being in said release position; and unmovable from said latched position to said unlatched position when being in said safety position;

10 applying a resilient force in said first direction to move said locking plate in said safety position; and

in said safety position, applying a gravitational force in said first direction to overcome said resilient force and move said locking plate to said release position.

15 2. The locking method according to claim '1 wherein a first spring is used in said first direction to maintain said locking plate in said release position.

3. The locking method according to claim 1 wherein a second spring is used in said second direction to maintain said locking plate in said latched position.

4. The locking method according to claim 1 wherein said resilient force is provided by a third spring.

20 5. The locking method according to claim 1 wherein said gravitational force is provided by an object.

6. A locking mechanism, comprising:

a guiding plate, movable in a first direction; a second spring mounted in said first direction and supports said guiding plate movable between a release position where said second spring is relieved, and a safety position where said second spring is pressed; said guiding plate is formed with a hole;

5 a locking plate, mounted to said guiding plate to be movable in a second direction perpendicular to said first direction, and movable in accompany with said guiding plate in said release position and said safety position in said first direction; a third spring mounted in said second direction and supports said locking plate in movable in a latched position where said third spring is relieved, and a unlatched position where said third spring is pressed; said locking plate is formed
10 with a stopping portion correspondent to said hole, and at least a locking hole;

a stopping rod, mounted in said fist direction and correspondent to said hole and said stopping portion; said stopping rod comes into said hole and said stopping portion in said safety position, and released from said stopping portion in said release position; and

at least a hook, correspondent to said hole and supported by a first spring opposed to pressing
15 force of said second spring; said hook presses said first spring and hooks on said locking hole in said latched position by force of said second spring; said locking plate is unmovable in said second direction when said first spring presses said second spring and moves said locking plate into said safety position; said locking plate is retrieved to said release position when an external force applies on said first spring to let said second spring release said locking plate movable in said second
20 direction; then said hook is released from said locking plate by force of said first spring when an external force applies on said locking plate to press said third spring and move to said unlatched position.

7. The locking mechanism according to claim 6 further comprises a pair of guiding rods for guiding said guiding plate and said locking plate moving along said first direction; length of said
25 guiding rods is longer than that of said stopping rod.

8. The locking mechanism according to claim 6 wherein said guiding element is formed with a pair of rails extending in said first direction; said locking plate is formed with rail slots for receiving said rails and movable in said second direction.

5 9. The locking mechanism according to claim 6 wherein said locking hole is formed with a slope at one side thereof and extended in said first direction.

10. A retractable device having a safety locking mechanism, comprising:

a first element, having a stopping rod and two guiding rods formed on one end thereof; two locking holes are formed on sides of said stopping rod; a spring is mounted in said first element;

10 a second element, movably mounted on said first element and supported by said first spring; one end thereof is formed with two hooks; said second element normally keeps an utmost distance with said first element; said hooks pass through said locking holes after pressing said first spring; and

a locking mechanism mounted on said first element correspondent to said stopping rod; comprises:

15 a guiding plate, movable in a first direction; a second spring mounted in said first direction and supports said guiding plate movable between a release position where said second spring is relieved, and a safety position where said second spring is pressed; said guiding plate is formed with a hole; and

20 a locking plate, mounted to said guiding plate to be movable in a second direction perpendicular to said first direction, and movable in accompany with said guiding plate in said release position and said safety position in said first direction; a third spring mounted in said second direction and supports said locking plate in movable in a latched position where said third spring is relieved, and a unlatched position where said third spring is pressed; said locking plate is formed with a stopping portion correspondent to said hole, and at least a locking hole;

thereby, said stopping rod comes into said hole and said stopping portion in said safety position, and released from said stopping portion in said release position; said locking plate is unmovable in said second direction when said first spring presses said second spring and moves said locking plate into said safety position; said locking plate is retrieved to said release position when a gravitational force applies on said first spring to let said second spring release said locking plate movable in said second direction; then said hook is released from said locking plate by force of said first spring when an external force applies on said locking plate to press said third spring and move to said unlatched position; said second element is moved outward from said first element by force of said first spring.

11. The retractable device according to claim 10 wherein said guiding plate is formed with rails extended in said first direction for coming into rail holes formed on said locking plate and movable in said second direction.

12. The retractable device according to claim 10 wherein one side of said locking holes is formed with a slope extended in said first direction.

13. The retractable device according to claim 10 wherein said hook comprises slopes and hook portions.

14. The retractable device according to claim 10 wherein said first element is formed with a partition near one end thereof for locating said stopping rod and said guiding rods, and forming a space for receiving said locking mechanism.

15. The retractable device according to claim 14 further comprises a cover for enclosing said space.